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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,643	12/17/2003	Michael A. Kneissl	115255	3827

27074 7590 02/10/2006

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EXAMINER	
DICKEY, THOMAS L	

ART UNIT	PAPER NUMBER
2826	

DATE MAILED: 02/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/736,643	KNEISSL ET AL.	
	Examiner	Art Unit	
	Thomas L. Dickey	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16,18 and 21-24* is/are rejected.

7)☒ Claim(s) *14,17,19 and 20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *03/17/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Oath/Declaration

1. The oath/declaration filed on 04/16/2004 is acceptable.

Drawings

2. The formal drawings filed on 12/17/2003 are acceptable.

Priority

3. Applicants have made no claim for priority.

Information Disclosure Statement

4. The Information Disclosure Statement filed on 03/17/2004 has been considered.

5. The information disclosure statement filed 11/02/2005 fails to comply with 37 CFR 1.98(a)(1), which requires, on a clearly marked sheet or sheets, a list of all patents, publications, applications, or other information submitted for consideration by the Office having (1) U.S. patents and U.S. patent application publications listed in a section separately from citations of other documents; (2) the application number of the application in which the information disclosure statement is being submitted on each page of the list; (3) a column that provides a blank space next to each document to be considered, for the examiner's initials; and (4) a heading that clearly indicates that the

list is an information disclosure statement. The information disclosure statement has been placed in the application file, but the information referred to therein has not been considered.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

A. Claims 1-4,8,10-13,16,18, and 21-24 are rejected under 35 U.S.C. 102(b) as being anticipated by SAITO ET AL. (6,121,63).

Saito et al. discloses a semiconductor laser diode comprising a GaN, InGaN, AlGaN, or InAlGaN multiple quantum well (said multiple quantum well comprising undoped or partially or completely Si-doped barrier layers) active region 205 having a thickness of about 9 nm, a p-side, and an n-side; an n-type Si doped carrier confinement layer 207 provided on the n-side of the single or multiple quantum well active region 205; a p-type Mg doped carrier confinement layer 203 provided on the p-side of the single or multiple quantum well active region 205; and undoped spacer layers 204,206 provided between

the single or multiple quantum well active region 205 and the n-type 207 and p-type 203 carrier confinement layers; a p-type waveguide layer 202 provided adjacent to the p-type carrier confinement layer 203; an n-type waveguide layer 208 provided adjacent to the n-type carrier confinement layer 207; a p-type cladding layer 201 provided adjacent to the p-type waveguide layer 202; an n-type cladding layer 209 provided adjacent to the n-type waveguide layer 208; barriers between quantum wells in the multiple quantum well active region 205 having a thickness between about 1 nm and about 10 nm, wherein the each of the n-type 207 and p-type 203 carrier confinement layers and the undoped spacer layers 204,206 have an aluminum content which is about 10% to about 30% higher than an aluminum content of the quantum well active region 205, the undoped spacer layers 204,206 have an aluminum content which is about 0% to about 20% lower than the aluminum content of each of the n-type 207 and p-type 203 carrier confinement layers, each of the p-type 202 and n-type 208 waveguide layers comprises AlGaN with aluminum content of about 6%, and each of the p-type 201 and the n-type 209 cladding layers comprises AlGaN with aluminum content of about 13%. Note figures 6A and column 8 line 16 through column 9 line 4 of Saito et al.

B. Claims 1,2,5-7,9-12,16,18,21, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by MATSUMOTO ET AL. (EP908988A).

Matsumoto et al. discloses a semiconductor laser diode comprising a GaN, InGaN, AlGaN, or InAlGaN multiple quantum well (said multiple quantum well comprising undoped or partially or completely Si-doped barrier layers) active region 607 having a p-side and an n-side; an n-type Si doped carrier confinement layer 605 provided on the n-

side of the single or multiple quantum well active region 607; a p-type Mg doped carrier confinement layer 609 provided on the p-side of the single or multiple quantum well active region 607; undoped spacer layers 606,608 provided between the single or multiple quantum well active region 607 and the n-type 605 and p-type 609 carrier confinement layers; a p-type waveguide layer 610 provided adjacent to the p-type carrier confinement layer 609; an n-type waveguide layer 604 provided adjacent to the n-type carrier confinement layer 605; a p-type cladding layer 611 provided adjacent to the p-type waveguide layer 610; an n-type cladding layer 603 provided adjacent to the n-type waveguide layer 604; quantum wells in the multiple quantum well active region 607 having a thickness between about 2 nm and about 20 nm; and barriers between quantum wells in the multiple quantum well active region 607 having a thickness between about 1 nm and about 10 nm; wherein an aluminum content of the p-type carrier confinement layer 609 is different than an aluminum content of the n-type carrier confinement layer 605 and the thickness of each of the undoped spacer layers 606,608 is about 4 nm. Note figures 11,12 and page 15 lines 5-48 of Matsumoto et al.

C. Claims 1,2,5, 8-10, and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by SEKO ET AL. (6,597,017).

Seko et al. discloses a semiconductor laser diode comprising a GaN, InGaN, AlGaN, or InAlGaN multiple quantum well active region 14 having a p-side and an n-side; an n-type carrier confinement layer 12 provided on the n-side of the single or multiple quantum well active region 14; a p-type carrier confinement layer 16 provided on the p-side of the single or multiple quantum well active region 14; and undoped spacer

layers13, 15 provided between the single or multiple quantum well active region 14 and the n-type 12 and p-type 16 carrier confinement layers; quantum wells (note column 15 lines 10-15) in the multiple quantum well active region 14 having a thickness between about 2 nm and about 20 nm.; and barriers (note column 15 lines 10-15) in the multiple quantum well active region 14 being about 6 nm thick; wherein a thickness of each undoped spacer layer 13,15 is between about 2 nm and about 20 nm. Note figure 4 and column 15 lines 1-54 of Seko et al.

Allowable Subject Matter

7. Claims 14, 17,19, and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

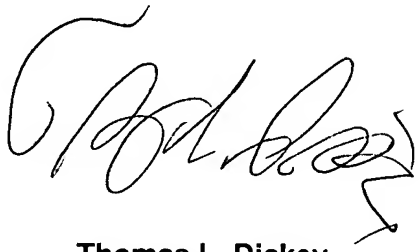
Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas L Dickey whose telephone number is 571-272-1913. The examiner can normally be reached on Monday-Thursday 8-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J Flynn can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published

applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Thomas L. Dickey
Patent Examiner
Art Unit 2826
02/06